Problem Definition and Analysis

Company Description:

The City of Henderson (COH) is one of the largest municipal governments in the Las Vegas valley region with large vacant areas for development. The COH population is around 300,000 residents. Local municipal entities are responsible for providing the needed service to constituents within the geographical borders for a fee. Revenues for the municipal entities are mainly from property taxes and from sales tax from the state.

The Building and Fire Safety (BFS) Department of the municipal entity is responsible for providing building permits and inspections. It is funded much like an independent business, and must meet their expense budget through permit and other fees.

Problem Definition:

The COH BFS Department operates a manual permit tracking system. As the City wants to remain innovative and cutting edge, it has determined to take the permit tracking system digital, by designing a computer system to track permits. The municipal entity must create a new system to track permits from submittal through inspection, including plan submission, review, inspection, and fee payments. This system should be robust enough to track permits through each stage of the process similar to a workflow program, where tasks, information and documents are passed from one participant to another for action, according to a set of procedural rules. Also, it may be a good time to look into web and application interfaces to allow for more customer interactions online and to move the inspections teams from paper sign-offs to digital sign-offs.

System Request

Project sponsor: Director of BFS Department.

Business Need: Build a computerized permit tracking system.

Business Requirements:

- Provide for tracking of building and fire permits from submission to inspection
- Provide for tracking and allocation of building and fire permit fees
- Provide for tracking of applications, records, and fees for city business licenses

Business Value:

- Provide a needed public service to constituents
- System could include upgrades to online customer portal and internal applications for movement to a reduced-paper system
- Further the city's vision of being a premier place to live, work, and play

Special Issues or Constraints:

- Failure would lead to a city that is less in line with strategical goals of being premier.
- Must abide by state rules for contract award.

Feasibility Analysis

Technical Feasibility: Can We Build It?

- Strong, dedicated, and experienced IT department that has designed and implemented other software solutions for other city departments.

- IT staff also familiar with current software trends and options (e.g., web portal and mobile application)

- Project Size: Large project with implementation at two sites (one main site, and one satellite)

Economic Feasibility: Should We Build It?

- Development Costs: Likely very large, but it is an investment in a system that should be useful for many years to come.

- Annual Operating Costs: Likely to be minimal to medium as support will be provided in-house.

- Annual Benefits (Cost Savings and Revenues): Savings from web and mobile app (paperless) transactions likely to add up.

- Intangible Costs and Benefits: Provide same or better service to constituents will influence mission of being the premier city

Organizational Feasibility: If We Build It, Will They Come?

- Project Champion(s): Director of Building and Fire Safety, IT Project Manager

- Senior Management: Will be needed to approve expenditures and vendors

- Users: Will need to learn how to operate new system

- Other Stakeholders: Community partners (developers and businesses), citizens

Function Point Estimate

To estimate the project size, efforts, and time, we used the function point estimating method as described below:

Step One

Inputs/Outputs:

Based on the building permit checklists, we determined the number of permit types in place. Each permit type has its uniques prerequisites, submittal requirements, and approval process. We used the permit type to determine the number of input/output functions. Refer to Appendix I for detailed Input/Output function descriptions.

Queries:

Each permit type data input will be stored in a separate table, which will be used to build a query for monthly monitoring and reporting purposes. In addition, an executive dashboard query is required to summarize information for all types permit submission. The total query is the number of permit types plus one.

Files:

We will create one database file with multiple tables to store the submitted permit request data.

Program Interfaces:

Due to the high volume of attachments to the workflow program, we determined that a document management system should be used to store and retrieve attachment files. The document management system is considered to be a program interface.

Function Points Calculation:

We assessed the complexity level, which has points assigned to each level, for inputs, outputs, queries, files and program interfaces. We then calculated the total function points by multiplying the number of functions with the complexity point as shown in the schedule below:

Step One: Compute Total Unadjusted Function Points						
Description	**No. of Functions**	**Levels of Complexity**			**Complexity Assessment**	**Total Function Points**
		Low	Mid	High		
	a				b	c=a*b
Inputs	43	3	4	6	3	129
Outputs	43	4	5	7	4	172
Queries	44	3	4	6	4	176
Files	1	7	10	15	15	15
Program Interfaces	1	5	7	10	5	5
Total Unadjusted Function Points (TUFP)						497

*Refer to Appendix I for Input/Output function descriptions and function points count.

Step Two

We assessed the project complexity using a scale of zero to five as shown in the schedule below:

Step Two: Assess Project Complexity	
Description	**Assessment (0-5)***
Data communications	5
Heavily used configuration	5
Transaction rate	2
End-user efficiency	1
Complex processing	5
Installation ease	1
Multiple sites	1
Performance	3
Distributed functions	0
On-line data entry	1
On-line update	2
Reusability	1
Operational ease	1
Extensibility	3
Project Complexity (PC)	**31**

*Note:0=no effect on processing complexity; 5=great effect on processing complexity.

Step Three

Step Three: Estimate Effort-in-Person Month		
Description	**Formula**	**Est. Value**
Adjusted Project Complexity (APC)	a=0.65+(0.01*PC)	0.96
Total Adjusted Function Points (TAFP)	b=a *TUFP	477
No. of Lines of Java/SQL Code per Function Point	c	40
Total Number of Lines of Code	d=c*b	19,085
Thousand Lines of Code	e=d/1000	19.09
Effort in Person Month	f=1.4*e	26.72

Note:

a. We adjusted the project complexity from Step Two above.

b. We applied the adjusted complexity factor to the total unadjusted function points that we calculated in Step One to derive at the total adjusted function points (TAFP).

c. We will code the program using Java and SQL language. We used the weighted average method to estimate the number of lines of code for each function point as follows:

Language	%	No. of Lines of Code per Function Point	Weighted No. of Lines of Code per Function Point
Java	40%	21	8.4
SQL	60%	53	31.8
Total			40

d. We estimated the total number of lines of code by multiplying the average code per function point (40) with the TAFP.

e. We converted the total number of lines of code into thousands.

f. Lastly, we applied the factor of 1.4 to the estimated lines of code in thousands to derive at the Effort-in-Person month.

Step Four

To estimate the schedule time, we applied a factor of 3.0 to the cube root of Effort-in-Person month, as shown in the schedule below:

Step Four: Estimate Schedule Time		
Description	**Formula**	**Est. Value**
Effort in Person Month	f	26.72
Effort in Person Month Cube Root	$g=f^{1/3}$	2.99
Schedule Time (in Month)	$h=3.0*g$	8.97

Work Plan

	Duration	**Dependency**

1. Planning

  1.1. First Build — ? days

    1.1.1. Create first version of evolutionary WBS — ? day

    1.1.2. Perform feasibility analysis — ? days

      1.1.2.1. Perform technical feasibility analysis — ? day

      1.1.2.2. Perform economic feasibility analysis — ? days

      1.1.2.3. Perform organizational feasibility analysis — ? days

    1.1.3. Identify staffing requirements for first build — ? days — 1.1.1, 1.1.2

    1.1.4. Compute first version of cost estimation — ? days — 1.1.3

  1.2. Second Build

…

  1.3. *N*th Build

2. Requirements Gathering and Use Case Development

  2.1. First Build

    2.1.1. Create requirements definition — ? days

      2.1.1.1. Determine requirements to track — ? day

      2.1.1.2. Compile requirements as they are elicited — ? days — 2.1.1.1

      2.1.1.3. Review requirements with sponsor — ? days — 2.1.1.2

    2.1.2. Elicit requirements — ? days

      2.1.2.1. Perform document analysis — ? days

      2.1.2.2. Conduct interviews — ? days

        2.1.2.2.1. Interview project sponsor — ? days

        2.1.2.2.2. Interview other personnel — ? days — 2.1.2.2.1

      2.1.2.3. Observe retail store processes — ? days

    2.1.3. Analyze current system

      2.1.3.1. Draw or reverse engineer functional models

      2.1.3.2. Draw or reverse engineer structural models

      2.1.3.3. Draw or reverse engineer behavioral models

    2.1.4. Identify opportunities for improvements

2.2. Second Build

…

2.3. *N*th Build

3. Builds

3.1. First Build

3.1.1. Analysis

3.1.1.1. Create functional models

3.1.1.2. Create structural models

3.1.1.3. Create behavioral models

3.1.1.4. Walkthrough analysis models

3.1.2. Design

3.1.2.1. Factor analysis models

3.1.2.2. Identify partitions and collaborations

3.1.2.3. Design problem domain classes and methods

3.1.2.3.1. Optimize class design

3.1.2.3.2. Restructure the design

3.1.2.3.3. Develop contracts and method specification

3.1.2.4. Design object persistence

3.1.2.5. Design user interfaces

3.1.2.6. Design physical architecture

3.1.2.7. Walkthrough design models

3.1.3. Implementation

3.1.3.1. Test system implementation

3.1.3.1.1. Perform unit tests

3.1.3.1.2. Perform integration tests

3.1.3.1.3. Perform system tests

3.1.3.1.4. Perform acceptance tests

3.1.3.2. Finalize system documentation

3.2. Second Build

3.2.1. Analysis

3.2.2. Design

        3.2.3.   Implementation

…

    3.3. *N*th Build

        3.3.1.   Analysis

        3.3.2.   Design

        3.3.3.   Implementation

4. Installation

Requirements Determination

Through the research performed, we have determined that the process for applying for a building permit is generally as follows, for all types of permits, though some permits may omit some steps:

- Permit technicians receive permit application from applicant (applicant could be a residence owner/occupant, a contractor, or a party performing work on the owner/occupant's behalf).
    - Determine whether new applicant or old applicant
        - Old applicant, add this permit application to their file
        - New applicant, record all pertinent information from application
    - Verify business license status, if applicable
    - Verify correct number of plan copies per permit type
    - Prepare plan review routing form(s)
    - Receive and post payment from applicant for submission and plan review fees
        - Forward payment to finance department
        - Give applicant receipt for transaction
    - File permit application in appropriate location
    - Forward plan set(s) to appropriate review area(s) for review
- Perform plan review
    - Receive plan(s) for project
    - Review plan(s) for compliance with building code(s)
        - Consult with applicant as questions arise
    - Determine compliance with building code(s).
    - Advise applicant and permit technicians of status
        - Plan(s) approved
            - Applicant pays inspection fees to permit technicians, who then:
                - Forward payments to Finance.
                    - Provide applicant with receipt
                - Advise inspection division that plans were approved and applicant has paid fee, so that applicant may call and schedule inspection.
                - File approved plans in holding file while applicant requests inspection, pending approval of inspection
        - Plan(s) denied
            - Applicant may abandon permit request
   - Applicant many resubmit plans with requested changes

- Perform inspections
    - Applicant calls to request inspection and schedule date and time of inspection
    - Inspector goes to site and performs inspection according to building code
        - Consult with applicant on-site, as necessary
    - Determine compliance with building code(s).
    - Advise applicant and permit technicians of status
        - Inspection(s) approved
            - Applicant requests certificate of occupancy
                - Permit technicians file approved inspections in holding file while applicant requests certificate of occupancy, pending final approval
        - Inspection(s) denied
            - Advise applicant and permit technicians what deficiencies exist
                - Applicant may abandon permit request
                - Applicant many resubmit plans with requested changes
- Applicant requests issuance of certificate of occupancy
    - Applicant pays permit technician fee for certificate of occupancy
        - Permit technician submits payment to finance.
    - Permit technician verifies plan approval
        - If problem arises, works with applicant to find solution (e.g., resubmittal)
    - Permit technician verifies inspection approval
        - If problem arises, works with applicant to find solution (e.g., reinspection)
    - Permit technician issues certificate of occupancy to applicant
        - Permit technician forwards a copy of the certificate of occupancy with a copy of approved plans and approved inspection documentation to City Clerk for permanent record-keeping.
- Resubmission (as required, depending on circumstances)
    - Applicant decides to resubmit request for plan review or building inspection
    - Permit technician reviews resubmittal application information
        - Ensure all applicant information up to date
        - Re-verify business license status, as needed.
        - If resubmittal is for plan review:
            - Verify correct number of revised plan copies per permit type
            - Prepare plan review routing form(s)
            - Receive and post payment from applicant for submission and plan review fees
                - Forward payment to finance department
                - Give applicant receipt for transaction
            - File permit application in appropriate location

- Forward plan set(s) to appropriate review area(s) for review
- If resubmittal is for building inspection:
  - Applicant pays reinspection fees to permit technicians, who then:
    - Forward payments to Finance.
      - Provide applicant with receipt
    - Advise inspection division that applicant has requested reinspection and has paid fee, so that applicant may call and schedule reinspection.
    - File approved plans in holding file while applicant requests reinspection, pending approval of resinspection
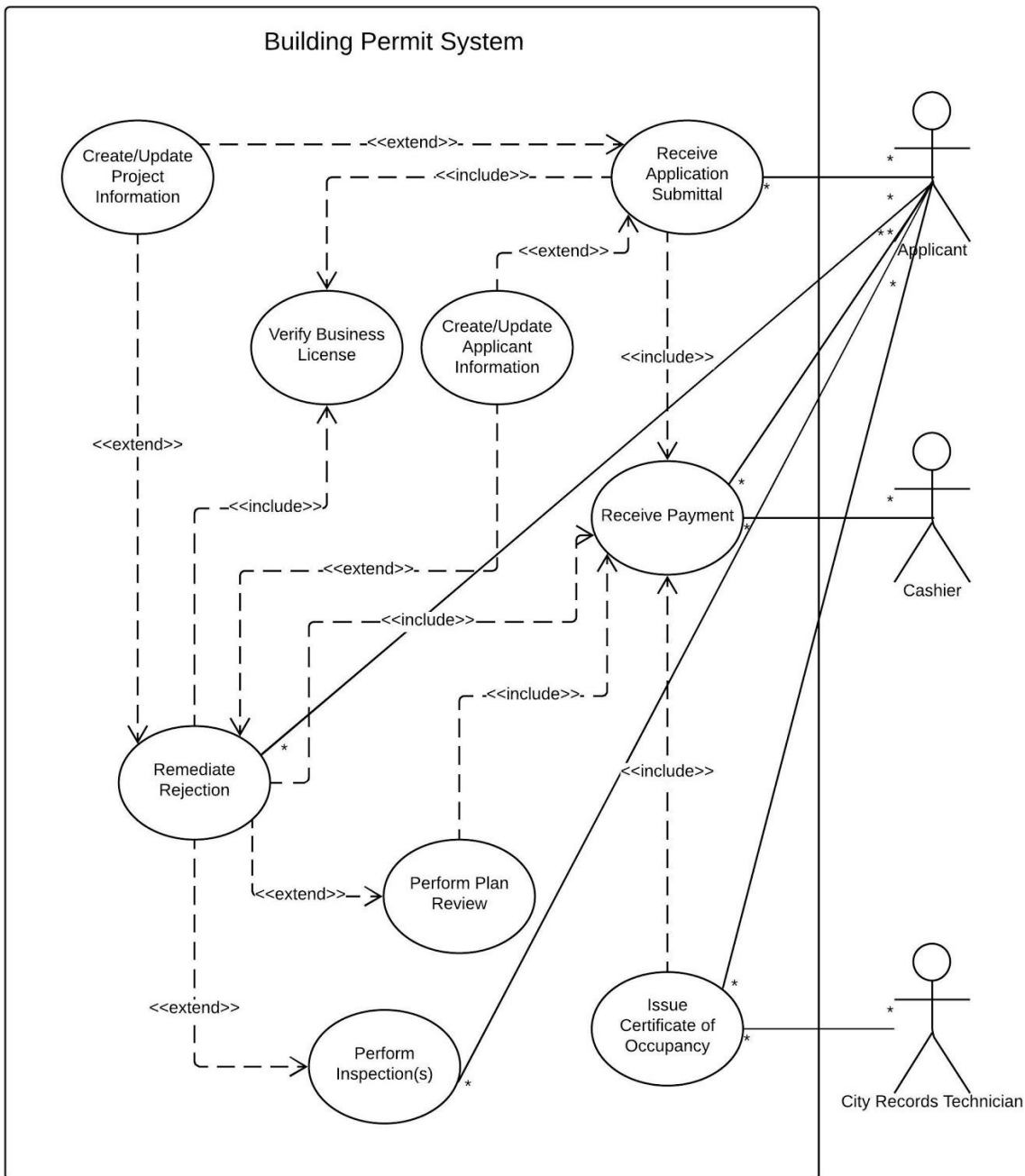
Use Case Diagrams – As-Is Organization
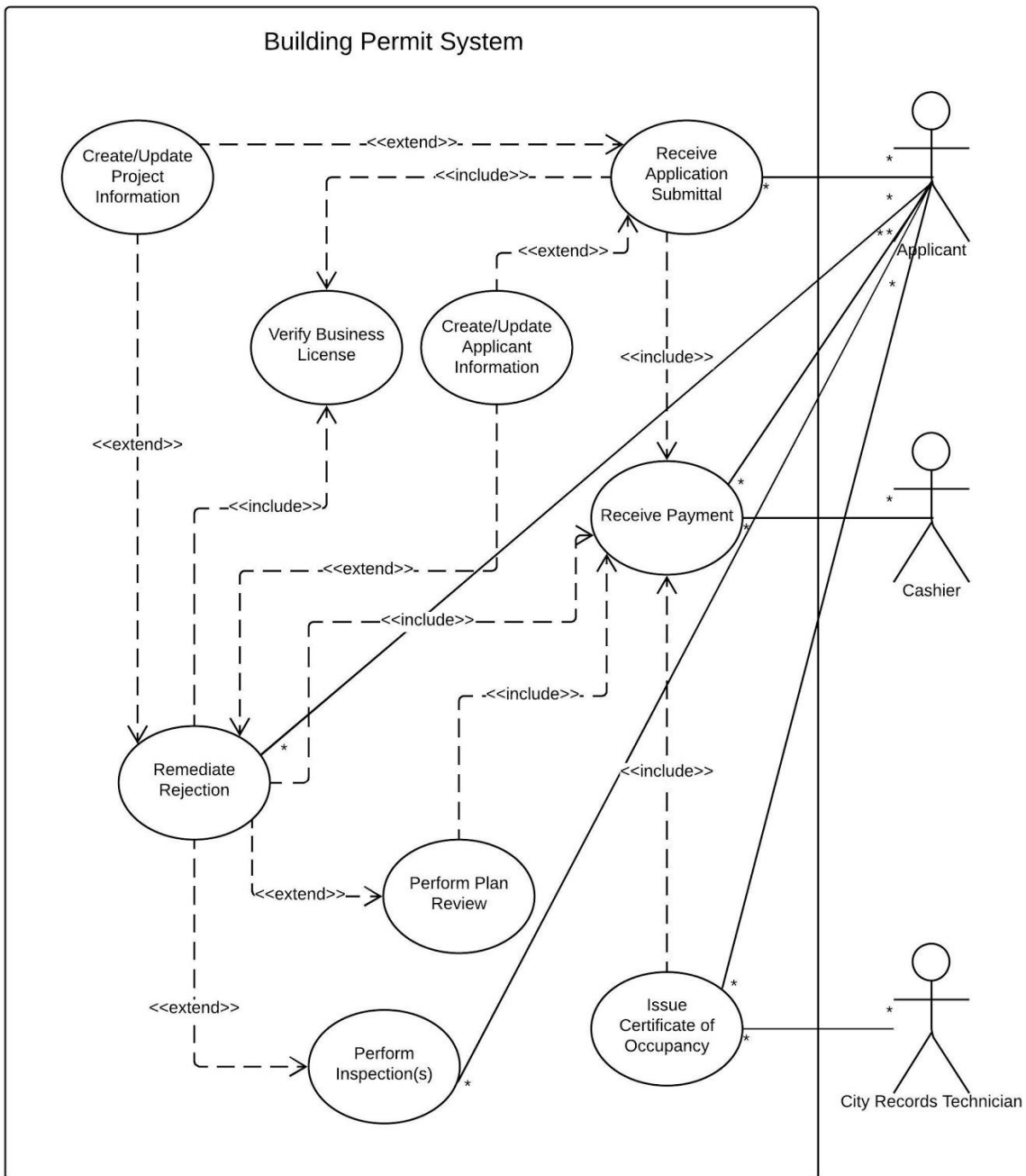
Use Case Diagrams – To-Be Organization

Use Case Diagrams – To-Be Information System
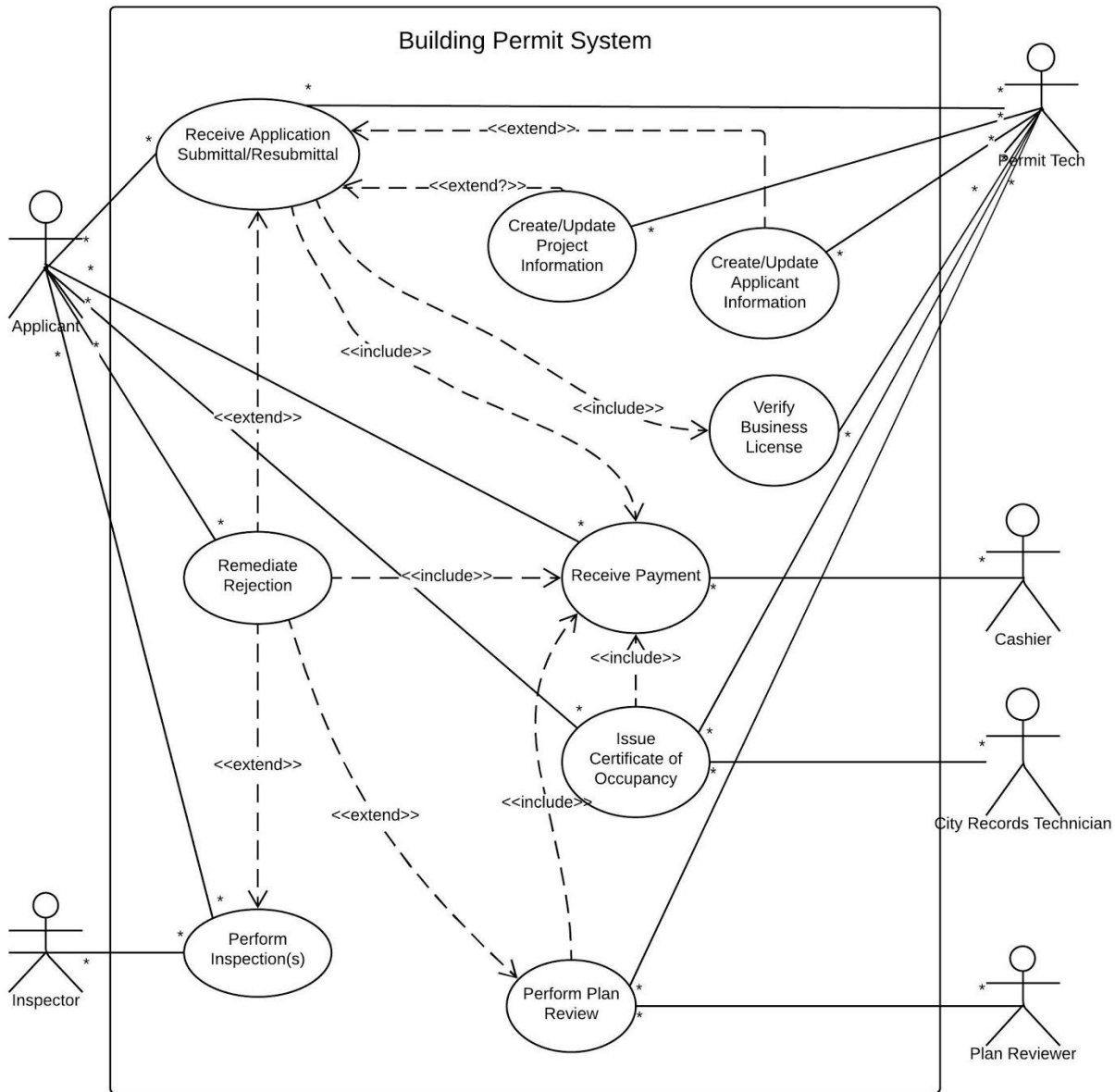
Use Case Descriptions

ID #	Use Case Description Name	Page #
1	Receive Application Submittal/Resubmittal Use Case	18-20
2	Perform Plan Review Use Case	21-23
3	Perform Inspection(s) Use Case	24-26
4	Issue Certificate of Occupancy Use Case	27-29
5	Remediate Rejection Use Case	30-32
6	Create/Update Applicant Information Use Case	Not drafted
7	Create/Update Project Information Use Case	Not drafted
8	Verify Business License Use Case	Not drafted
9	Receive Payment Use Case	33-35

As-Is Organization Use Case Description

Use Case Name: Receive Application Submittal/Resubmittal	ID: 1	Importance Level: High

Primary Actor: Applicant	Use Case Type: Detail, Essential

Stakeholders and Interests:
Applicant – wants permission to build from BFS.
Plan Review – must perform review work of plans being submitted.
Finance – receives cash payment from applicant to post to financial records

Brief Description: The use case describes how the application is processed in preparation to be forwarded to plan review.

Trigger: Applicant submits an application for a building permit.
Type: External

Relationships:
      Association: Applicant
      Include: Verify Business License, Receive Payment
      Extend: Create/Update Project Information, Create Update/Project Information
      Generalization: None

Normal Flow of Events:
1. The applicant submits an application package to the permit technician.
2. The permit technician creates/updates applicant information.
   a. Refer to Create/Update Applicant Information Use Case.
3. The permit technician creates/updates project information.
   a. Refer to Create/Update Project Information Use Case.
4. In the event that the applicant is a builder, the permit technician verifies business license status.
   a. Refer to Verify Business License Use Case.
5. The permit technician assesses fees according to project details, provides a fee listing, and sends the applicant for payment.
   a. Refer to Receive Payment Use Case.
6. The permit technician files the plans for review and forwards the submission to the plan review personnel.

SubFlows:

Alternate/Exceptional Flows:
A-1: The permit technician will reject the application, if applicant's non-compliant with business license or fee payment steps.
      Refer to Remediate Rejection Use Case.

To-Be Organization Use Case Description

Use Case Name: Receive Application Submittal/Resubmittal		ID: 1	Importance Level: High
Primary Actor: Applicant		Use Case Type: Detail, Essential	
Stakeholders and Interests: Applicant – wants permission to build from BFS. Plan Review – must perform review work of plans being submitted. Finance – receives cash payment from applicant to post to financial records			
Brief Description: The use case describes how the application is processed in preparation to be forwarded to plan review.			
Trigger: Applicant submits an application for a building permit. Type: External			

Relationships:
        Association: Applicant
        Include: Verify Business License, Receive Payment
        Extend: Create/Update Project Information, Create Update/Project Information
        Generalization: None			

Normal Flow of Events:
1. The applicant submits an application package to the permit technician.
2. The permit technician creates/updates applicant information.
    a. Refer to Create/Update Applicant Information Use Case.
3. The permit technician creates/updates project information.
    a. Refer to Create/Update Project Information Use Case.
4. In the event that the applicant is a builder, the permit technician verifies business license status.
    a. Refer to Verify Business License Use Case.
5. The permit technician assesses fees according to project details, provides a fee listing, and sends the applicant for payment.
    a. Refer to Receive Payment Use Case.
6. The permit technician files the plans for review and forwards the submission to the plan review personnel.			

SubFlows:			
Alternate/Exceptional Flows: A-1: The permit technician will reject the application, if applicant's non-compliant with business license or fee payment steps. Refer to Remediate Rejection Use Case.			

To-Be Information System Use Case Description

Use Case Name: Receive Application Submittal/Resubmittal	ID: 1	Importance Level: High
Primary Actor: Applicant	Use Case Type: Detail, Essential	

Stakeholders and Interests:
Applicant – wants permission to build from BFS.
Plan Review – must perform review work of plans being submitted.
Finance – receives cash payment from applicant to post to financial records

Brief Description: The use case describes how the application is processed in preparation to be forwarded to plan review.

Trigger: Applicant submits an application for a building permit.
Type: External

Relationships:
        Association: Applicant
        Include: Verify Business License, Receive Payment
        Extend: Create/Update Project Information, Create Update/Project Information,
Remediate Rejection
        Generalization: None

Normal Flow of Events:
1. The permit technician creates/updates applicant information.
   a. Refer to Create/Update Applicant Information Use Case.
2. The permit technician creates/updates project information.
   a. Refer to Create/Update Project Information Use Case.
3. In the event that the applicant is a builder, the permit technician verifies business license status.
   a. Refer to Verify Business License Use Case.
4. The permit technician records assessed fees in the system.
   a. Refer to Receive Payment Use Case.
5. The system forwards notification that plans are ready to review.

SubFlows:

Alternate/Exceptional Flows:
A-1: If the system shows applicant non-compliant with verify business license, it will not allow fees to be assessed.
        Refer to Remediate Rejection Use Case.

As-Is Organization Use Case Description

Use Case Name: Perform Plan Review		ID: 2	Importance Level: High
Primary Actor: Plan Reviewer		Use Case Type: Detail, Essential	
Stakeholders and Interests: Applicant – receive plan approval. Inspector – receive request for inspection from applicant upon successful review Cashier – receives cash payment and posts to financial records.			
Brief Description: This use case details the plan review process.			
Trigger: Application approved and submission fees paid. Type: Internal			

Relationships:
        Association: None
        Include: Receive Payment
        Extend: Remediate Rejection
        Generalization: None			

Normal Flow of Events: 1) Plan Reviewer receives notification that plans are ready to be reviewed. 2) Plan Reviewer physically retrieves the plans to be reviewed. 3) Plan reviewer performs review of the plans with a checklist – specifically to the type of project they are reviewing. 4) Plan Reviewer approves or denies the plans. a) Refer to Subflows below.			

SubFlows:
S-1: Approval
        1.   Permit Technician notifies Applicant of approval
        2.   Applicant pays fees and requests inspection.
S-2: Denial
        1.   Permit Technician notifies applicant of denial and reason(s) for denial.
        2.   Applicant should prepare for re-submission or cancel project.
                Refer to Remediate Rejection Use Case.			

Alternate/Exceptional Flows:			

To Be Organization Use Case Description

Use Case Name: Perform Plan Review		ID: 2	Importance Level: High
Primary Actor: Plan Reviewer		Use Case Type: Detail, Essential	
Stakeholders and Interests: Applicant – receive plan approval. Inspector – receive request for inspection from applicant upon successful review Cashier – receives cash payment and posts to financial records.			
Brief Description: This use case details the plan review process.			
Trigger: Application approved and submission fees paid. Type: Internal			

Relationships:
       Association: None
       Include: Receive Payment
       Extend: Remediate Rejection
       Generalization: None			

Normal Flow of Events: 1) Plan Reviewer receives notification that plans are ready to be reviewed. 2) Plan Reviewer physically retrieves the plans to be reviewed. 3) Plan reviewer performs review of the plans with a checklist – specifically to the type of project they are reviewing. 4) Plan Reviewer approves or denies the plans. a) Refer to Subflows below.			

SubFlows:
S-1: Approval
      1.   Permit Technician notifies Applicant of approval
      2.   Applicant pays fees and requests inspection.
S-2: Denial
      1.   Permit Technician notifies applicant of denial and reason(s) for denial.
      2.   Applicant should prepare for re-submission or cancel project.
          Refer to Remediate Rejection Use Case.			

Alternate/Exceptional Flows:			

To Be Information System Use Case Description

Use Case Name: Perform Plan Review		ID: 2	Importance Level: High
Primary Actor: Plan Reviewer	Use Case Type: Detail, Essential		
Stakeholders and Interests: Applicant – receive plan approval. Inspector – receive request for inspection from applicant upon successful review Cashier – receives cash payment and posts to financial records.			
Brief Description: This use case details the plan review process.			
Trigger: Application approved and submission fees paid. Type: Internal			

Relationships:
          Association: Plan Reviewer, Permit Technician
          Include: Receive Payment
          Extend: Remediate Rejection
          Generalization: None			

Normal Flow of Events: 1) Plan Reviewer receives notification that plans are ready to be reviewed. 2) Plan reviewer documents review of the plans in a checklist within the system. 3) Plan Reviewer records approval or denial of the plans in the system. a) Refer to Subflows below.			

SubFlows:
S-1: Approval
     1.   System notifies Permit Technician of approval, so they can assess fees.
     2.   System schedules inspection after fees paid, by request from Permit Technician.
S-2: Denial
     1. System notifies Permit Technician of denial and reason(s) for denial so they can communicate to applicant.			

Alternate/Exceptional Flows:			

As-Is Organization Use Case Description

Use Case Name: Perform Inspection	ID: 4	Importance Level: High
Primary Actor: Applicant		Use Case Type: Detail, Essential

Stakeholders and Interests:
Permit Technician – prepare the file for submission to inspection personnel
Inspectors - do the actual project inspection
Applicants - want to get schedule inspection
Finance – receives cash payment and posts to financial records.

Brief Description: This use case describes how applicants get their inspection and approval or denial.

Trigger: Applicants calls to schedule a physical inspection from City of Henderson
Type: External

Relationships:
Association: Applicant
Include: None
Extend: Remediate Rejection Use Case
Generalization: None

Normal Flow of Events:
1.   Applicant calls to request inspection.
2.   Inspector verifies plan review approval and inspection fees paid.
3.   Inspector schedules inspection date and time for applicant.
4.   Inspector perform inspection.
5.   Inspector makes decision and documents decision and remediation in project file.
See Subflows below

SubFlows:
S-1: Approval
1.   Inspector will notify applicants that they passed inspection(s).
S-2: Denial
1.   Inspector notifies applicant that their project has been rejected and provides reason(s) for rejection.
2.   If Applicant decides they want to remediate and resubmit the project.
a.   Refer to Receive Resubmittal Use Case.

Alternate/Exceptional Flows:

To-Be Organization Use Case Description

Use Case Name: Perform Inspection		ID: 4	Importance Level: High
Primary Actor: Applicant		Use Case Type: Detail, Essential	
Stakeholders and Interests: Permit Technician – prepare the file for submission to inspection personnel Inspectors - do the actual project inspection Applicants - want to get schedule inspection Finance – receives cash payment and posts to financial records.			
Brief Description: This use case describes how applicants get their inspection and approval or denial.			
Trigger: Applicants calls to schedule a physical inspection from City of Henderson Type: External			

Relationships:
      Association: Applicant
      Include: None
      Extend: Remediate Rejection Use Case
      Generalization: None			

Normal Flow of Events:
   1.   Applicant calls to request inspection.
   2.   Inspector verifies plan review approval and inspection fees paid.
   3.   Inspector schedules inspection date and time for applicant.
   4.   Inspector perform inspection.
   5.   Inspector makes decision and documents decision and remediation in project file.
See Subflows below			

SubFlows:
  S-1: Approval
     1.   Inspector will notify applicants that they passed inspection(s).
  S-2: Denial
     1.   Inspector notifies applicant that their project has been rejected and provides reason(s) for rejection.
     2.   If Applicant decides they want to remediate and resubmit the project.
        a. Refer to Remediate Rejection Use Case.			

Alternate/Exceptional Flows:			

To Be Information System Use Case Description

Use Case Name: Perform Inspection		ID: 4	Importance Level: High
Primary Actor: Applicant		Use Case Type: Detail, Essential	
Stakeholders and Interests: Permit Technician – prepare the file for submission to inspection personnel Inspectors - do the actual project inspection Applicants - want to get schedule inspection Finance – receives cash payment and posts to financial records.			
Brief Description: This use case describes how applicants get their inspection and approval or denial.			
Trigger: Applicants calls to schedule a physical inspection from City of Henderson Type: External			

Relationships:
        Association: Applicant and Inspector
        Include: None
        Extend: Remediate Rejection Use Case
        Generalization: None			

Normal Flow of Events: 1. Inspector verifies plan review approval and inspection fees paid in system. 2. Inspector schedules inspection date and time for applicant and record in system. 3. Inspector makes decision and documents the decision and denial reasons, if applicable, in the system. See Subflows below			

SubFlows:
    S-1: Approval
        1.   System will send notification to applicants that they passed inspection(s), including next step(s).
    S-2: Denial
        1. System notifies applicant that their project has been rejected and provides reason(s) for rejection.			

Alternate/Exceptional Flows:			

As-Is Organization Use Case Description

Use Case Name: Issue Certificate Of Occupancy		ID: 4	Importance Level: High
Primary Actor: Applicant		Use Case Type: Detail, Essential	
Stakeholders and Interests: Applicant – wants Certificate of Occupancy (COO) for completion of project. Permit Technician – verifies approvals and prepares COO for applicant. Finance – receives cash payment and posts to financial records. City Clerk – receives plans and sign-offs for official record-keeping.			
Brief Description: This use case describes how to obtain certificate of Issuance on plans being reviewed and receiving a successful payment.			
Trigger: Application for certificate of occupancy Type: External			

Relationships:
     Association: Applicant and City Clerk
     Include: Receive Payment
     Extend:
     Generalization:			

Normal Flow of Events:
  1. Applicant requests COO.
  2. Permit Technician retrieves the project file from filing cabinet.
  3. Permit Technician verifies the plans review approval.
  4. Permit Technician verifies inspection approval.
  5. Permit Technician assess the fee, creates a fee listing, and gives applicant a copy.
  6. Applicant makes a payment to the cashier..
      a. Refer to Receive Payment Use Case.
  7. Permit Technician verifies payment by reviewing receipt copy.
  8. Permit Technician issues a COO.
  9. Permit Technician sends a copy of the issued COO to city clerk.			

SubFlows:			
Alternate/Exceptional Flows: A-1: If an approval is missing, the permit technician verifies the missing approval and advises applicant of reason(s) and procedure to resubmit. a. Refer to Receive Resubmittal Use Case.			

To-Be Organization Use Case Description

Use Case Name: Issue Certificate Of Occupancy		ID: 4	Importance Level: High
Primary Actor: Applicant		Use Case Type: Detail, Essential	
Stakeholders and Interests: Applicant – wants Certificate of Occupancy (COO) for completion of project. Permit Technician – verifies approvals and prepares COO for applicant. Finance – receives cash payment and posts to financial records. City Clerk – receives plans and sign-offs for official record-keeping.			
Brief Description: This use case describes how to obtain certificate of Issuance on plans being reviewed and receiving a successful payment.			
Trigger: Application for certificate of occupancy Type: External			

Relationships:
    Association: Applicant and City Clerk
    Include: Receive Payment
    Extend:
    Generalization:			

Normal Flow of Events: 1. Applicant requests COO. 2. Permit Technician retrieves the project file in system. 3. Permit Technician verifies the plans review approval. 4. Permit Technician verifies inspection approval. 5. Permit Technician assess the fee, adds fee to project, and sends applicant for payment.. 6. Applicant makes a payment to the cashier.. a. Refer to Receive Payment Use Case. 7. Permit Technician verifies payment by reviewing payment status in system. 8. Permit Technician issues a COO. 9. Issued COO is stored in record-keeping system maintained by City Clerk.			
SubFlows:			
Alternate/Exceptional Flows: A-1: If an approval is missing, the permit technician verifies the missing approval and advises applicant of reason(s) and procedure to resubmit. a. Refer to Receive Resubmittal Use Case.			

To-Be Information System Use Case Description

Use Case Name: Issue Certificate Of Occupancy		ID: 4	Importance Level: High
Primary Actor: Applicant		Use Case Type: Detail, Essential	
Stakeholders and Interests: Applicant – wants Certificate of Occupancy (COO) for completion of project. Permit Technician – verifies approvals and prepares COO for applicant. Finance – receives cash payment and posts to financial records. City Clerk – receives plans and sign-offs for official record-keeping.			
Brief Description: This use case describes how to obtain certificate of Issuance on plans being reviewed and receiving a successful payment.			
Trigger: Application for certificate of occupancy Type: External			
Relationships: 　　　　Association: Applicant, City Clerk, Permit Technician 　　　　Include: Receive Payment 　　　　Extend: 　　　　Generalization:			
Normal Flow of Events: 　　1.　Permit Technician retrieves the project file in system. 　　2.　Permit Technician verifies the plans review approval. 　　3.　Permit Technician verifies inspection approval. 　　4.　Permit Technician assess the fee and adds fee to project file. 　　5.　Payment is updated in system by cashiering system interface 　　　　　a.　Refer to Receive Payment Use Case. 　　6.　Permit Technician verifies payment by reviewing payment status in system. 　　7.　Issued COO is stored in record-keeping system maintained by City Clerk.			
SubFlows:			
Alternate/Exceptional Flows: A-1: If an approval is missing, the permit technician verifies the missing approval and advises applicant of reason(s) and procedure to resubmit. 　　　　　a.　Refer to Receive Resubmittal Use Case.			

As-Is Organization Use Case Description

Use Case Name: Remediate Rejection		ID: 5	Importance Level: High
Primary Actor: Applicant		Use Case Type: Detail, Essential	

Stakeholders and Interests:
Applicant - requests for review of revised application or request reinspection due to prior rejection.
Permit Technician - collects the application resubmission package, verifies business license, determines the service required, assesses the fee, and forwards the package to pertinent reviewer/inspector upon payment receipt.
Cashier - receives cash payment from applicant and posts payment information to financial records.

Brief Description: This use case describes how the resubmitted application/request for reinspection is currently processed.

Trigger: Applicant resubmits the permit application for approval or requests a reinspection.
Type: External

Relationships:
Association: Applicant
Include: Verify Business License, Receive Payment.
Extend: Create/Update Applicant Information, Create/Update Project Information, Perform Plan Review, Perform Inspection
Generalization:

Normal Flow of Events:

1. The applicant resubmits the application package to the permit technician to remediate the rejection of the building plan. Or the applicant requests a reinspection to remediate a previous rejection in building inspection.
   a. Refer to Receive Application Submission/Resubmission Use Case.
2. The permit technician updates the applicant information, if applicable.
   a. Refer to Create/Update Applicant Information Use Case.
3. The permit technician updates the project information, if applicable.
   a. Refer to Create/Update Project Information Use Case.
4. The permit technician verifies the business license status, if the applicant is a builder.
   a. Refer to Verify Business License Use Case.
5. The permit technician assesses the fee, provides a fee listing, and sends the applicant for payment.
   a. Refer to Receive Payment Use Case.
6. The permit technician forwards the resubmission package/request to the pertinent reviewer, upon receipt of proof of payment from the applicant.
   a. The "S1:forward the package" subflow is performed.

SubFlow:

S-1: Forward the package
1. The permit technician forwards the resubmission package to the Plan Reviewer, if the applicant is resubmitting the application.
2. The permit technician forwards the inspection request to the Inspector, if the applicant is requesting a reinspection.

Alternate/Exceptional Flows:
4 and 5. The permit technician issues a rejection letter and notifies the applicant of the reason(s) for rejection, if the business license is not active or not all required documents are completed and submitted. The application/request is rejected.

To-Be Organization Use Case Description

Use Case Name: Remediate Rejection		ID: 5	Importance Level: High
Primary Actor: Applicant		Use Case Type: Detail, Essential	
Stakeholders and Interests: Applicant - requests for review of revised application or requests a reinspection to remediate the previous rejection. Permit Technician - updates applicant file and project file to reflect revisions to application, verifies business license status, selects service required, and assesses fee. Cashier – posts payment information to the financial records.			
Brief Description: This use case describes how the resubmitted application/request for reinspection will be processed.			
Trigger: Applicant resubmits the application for approval or requests a reinspection. Type: External			

Relationships:
      Association: Applicant
      Include: Verify Business License, Receive Payment.
      Extend: Create/Update Applicant Information, Create/Update Project Information, Perform Plan Review, Perform Inspection
      Generalization:			

Normal Flow of Events:
1.   The applicant resubmits application or requests a reinspection.
2.   The permit technician enters the project ID to bring up the project file from the system and updates the application to reflect the resubmission.
      a.   Refer to Receive Application Submission/Resubmission Use Case and Create/Update Project File Use Case for application resubmission.
3.   The permit technician confirms the Plan Review's approval status, if the applicant is requesting a reinspection.
4.   The permit technician updates the applicant information, if applicable.
      a.   Refer to Create/Update Applicant Information Use Case.
5.   The permit technician verifies the business license status from the web-based "Nevada State Business Search" and "City of Henderson Active Business Licenses" databases, if the applicant is a builder.
https://www.nvsilverflume.gov/businessSearch
https://opendata.cityofhenderson.com/Business-License/Active-Business-Licenses/p3re-rqt9/data
      a.   Refer to Verify Business License Use Case.
6.   The permit technician selects the service type (Plan Review for application resubmission; Inspection for request of reinspection). The permit technician assesses the fee for selected service.
7.   The system generates the fee ID and notifies the applicant for payment amount and fee ID via email.
8.   The applicant makes payment at the Cashier. The Cashier posts the payment information in the Financial Records.
9.   Refer to Receive Payment Use Case.
10. Upon the posting of payment information, the system activates the selected service and grants the appropriate system user (plan reviewer or inspector) access to the resubmission/request.			

SubFlow: 			
Alternate/Exceptional Flows: 5 -8. The permit technician issues a rejection letter and notifies the applicant of the reason(s) for rejection, if the business license is not active or not all required documents are completed and submitted. The resubmitted application/request is rejected.			

To-Be Information System Use Case Description

Use Case Name: Remediate Rejection		ID: 5	Importance Level: High
Primary Actor: Applicant		Use Case Type: Detail, Essential	
Stakeholders and Interests: Applicant - submits revised application or requests a reinspection to remediate previous rejection. Permit Technician – updates applicant file and project file to reflect revisions to application, verifies business license status, selects service required, and assesses fee. Cashier – posts payment information to the financial records.			
Brief Description: This use case describes how the resubmitted permit application or request for a reinspection will be processed within the building permit application system.			
Trigger: Applicant resubmits the permit application for approval or requests a reinspection to remediate prior rejection. Type: External			

Relationships:
     Association: Applicant
     Include: Receive Application Submittal/Resubmittal, Receive Payment
     Extend: Perform Plan Review, Perform Inspection
     Generalization:			

Normal Flow of Events:
 1. The permit technician enters the project ID to bring up the previous submission.
 2. The permit technician then updates the application based on the resubmission, if the applicant is remediating a rejected plan.
     a. Refer to Receive Submission/Resubmission Use Case's Alternate/Exceptional Flow.
 3. The permit technician confirms the Plan Review's approval status, if the applicant is requesting a reinspection.
 4. The permit technician updates the applicant information, when applicable.
     a. Refer to Create/Update Applicant Information Use Case.
 5. The permit technician verifies the business license status from the web-based "Nevada State Business Search" and "City of Henderson Active Business Licenses" databases, if the applicant is a builder.
 https://www.nvsilverflume.gov/businessSearch
 https://opendata.cityofhenderson.com/Business-License/Active-Business-Licenses/p3re-rqt9/data
     a. Refer to Verify Business License Use Case.
 6. The permit technician selects the service type (Plan Review for application resubmission; Inspection for request of reinspection).
 7. The permit technician assesses the fee for selected service.
 8. The system generates the fee ID and notifies the applicant about the payment amount and fee ID via email.
 9. The applicant pays the fee at the Cashier.
     a. Refer to Receive Payment Use Case.
 10. The system activates the selected service upon the posting of payment information. The system grants the appropriate system user (plan reviewer or inspector) access to the resubmission/request.			

SubFlow:			
Alternate/Exceptional Flows: 5-8. The permit technician clicks the "Reject" button if the business license is not active or not all required documents are completed/submitted. The system generates the rejection letter and notifies the applicant via email.			

As-Is Organization Use Case Description

Use Case Name: Receive Payment Use Case		ID:	9	Importance Level: High
Primary Actor: Applicant		Use Case Type: Detail, Real		
Stakeholders and Interests: Applicant – pay fee to building department Permit technician or plan reviewer– provides fee listing to applicant for fees due Cashier – accept, record, and deposit cash to city accounting records				
Brief Description: This use case demonstrates how the building department will accept and record payments for services requested.				
Trigger: Applicant has fulfilled requirements to obtain service Type: External				

Relationships:
      Association: Applicant and Cashier
      Include: Receive Application Submittal/Resubmittal, Perform Plan Review, Issue Certificate of Occupancy, Remediate Rejection
      Extend:
      Generalization:				

Relationships:
      Association: Applicant and Cashier
      Include: Receive Application Use Case, Perform Plan Review Use Case, Issue Certificate of Occupancy Use Case, Resubmittal Use Case
      Extend:
      Generalization:				

Normal Flow of Events:
  1. Permit technician or plan reviewer gives fee listing to applicant.
  2. Applicant goes to cashier to make payment.
  3. Cashier posts payment to accounting system.
  4. Cashier provides applicant a receipt for the payment.
  5. Cashier provides permit technician with a copy of the receipt.
  6. Permit technician matches receipt to fee listing and files in project file.				

SubFlows:				
Alternate/Exceptional Flows:				

To-Be Organization Use Case Description

Use Case Name: Receive Payment Use Case		ID:	9	Importance Level: High
Primary Actor: Applicant		Use Case Type: Detail, Real		

Stakeholders and Interests:
Applicant – pay fee to building department
Permit technician or plan reviewer– provides fee listing to applicant for fees due
Cashier – accept, record, and deposit cash to city accounting records

Brief Description:	This use case demonstrates how the building department will accept and record payments for services requested.

Trigger:	Applicant has fulfilled requirements to obtain service
Type:	External

Relationships:	
Association:	Applicant and Cashier
Include:	Receive Application Submittal/Resubmittal, Perform Plan Review, Issue Certificate of Occupancy, Remediate Rejection
Extend:	
Generalization:	

Relationships:	
Association:	Applicant and Cashier
Include:	Receive Application Use Case, Perform Plan Review Use Case, Issue Certificate of Occupancy Use Case, Resubmittal Use Case
Extend:	
Generalization:	

Normal Flow of Events:
1. Permit technician or plan reviewer sends fee listing to cashiering system electronically.
2. Applicant contacts cashier to make payment (in person, over telephone, or online).
3. Cashier retrieves fee listing from their system and posts payment to accounting and building systems.
4. Cashiering system matches payment to fee listing in building system and marks fees paid.
5. Cashier provides applicant a receipt for the payment.

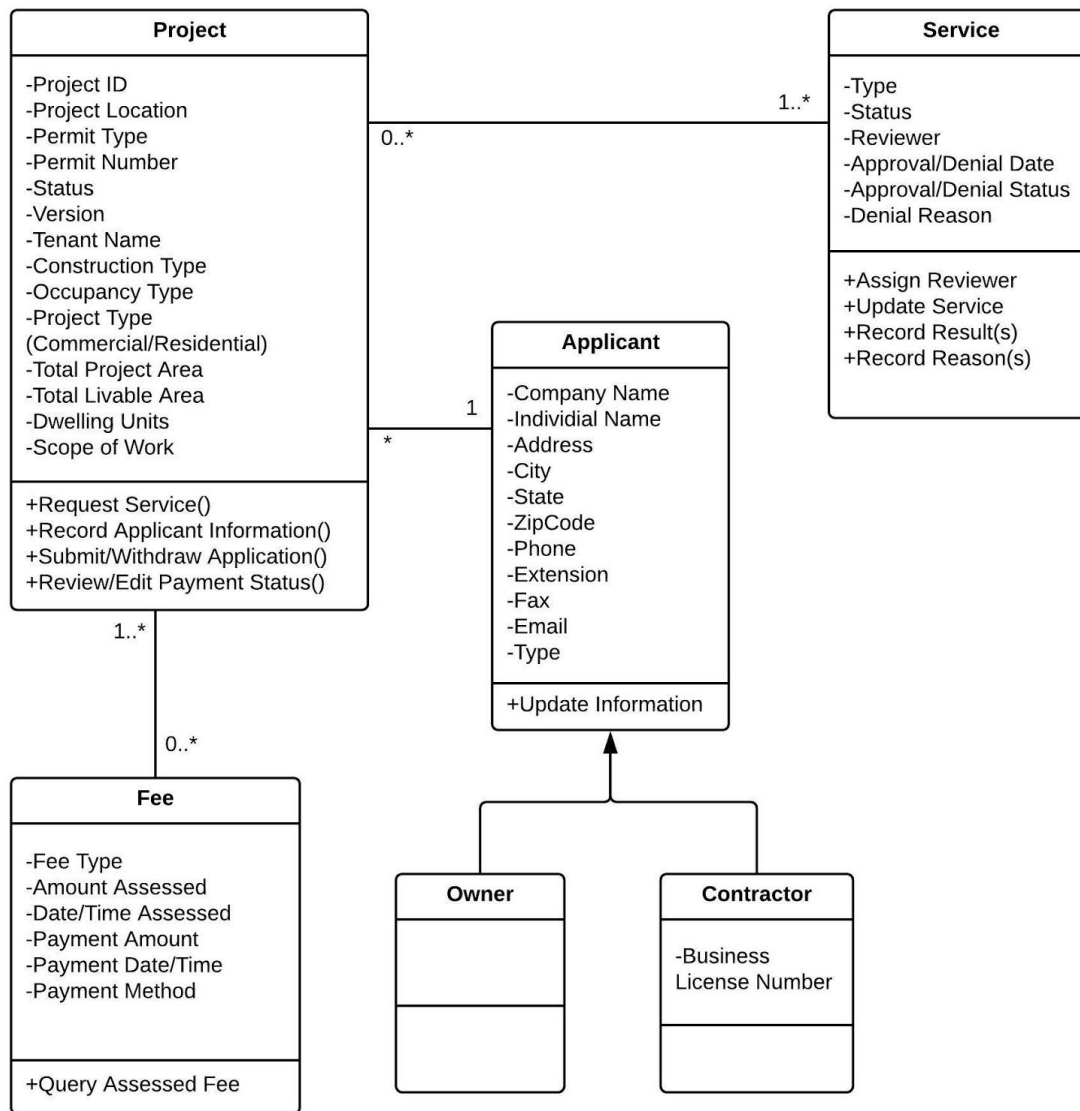SubFlows:

Alternate/Exceptional Flows:

TO-BE Information System Use Case Description

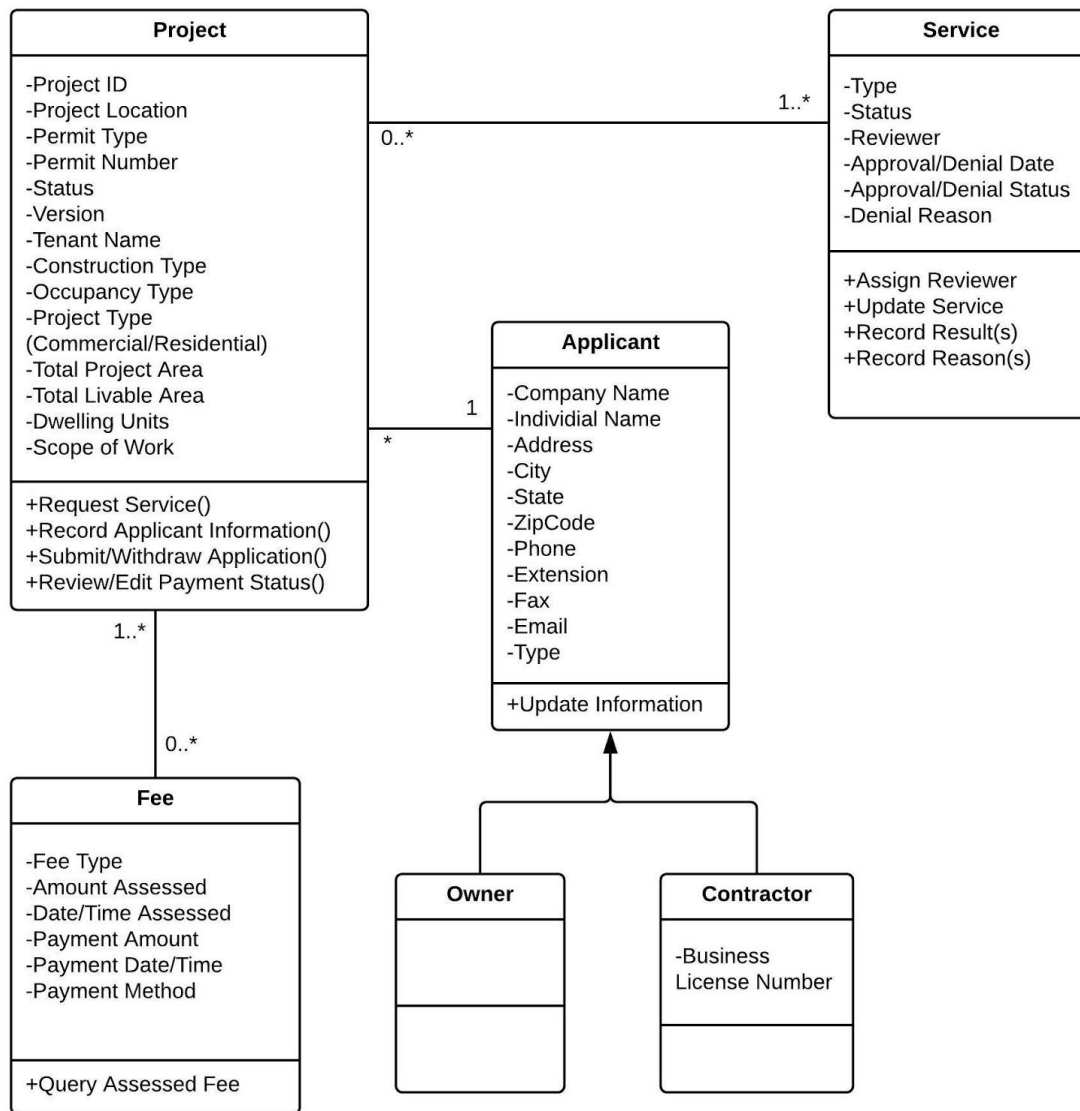| Use Case Name: Receive Payment Use Case		ID:	9	Importance Level: High
Primary Actor: Applicant		Use Case Type: Detail, Real		
Stakeholders and Interests: Applicant – pay fee to building department Permit technician or plan reviewer– provides fee listing to applicant for fees due Cashier – accept, record, and deposit cash to city accounting records				
Brief Description: This use case demonstrates how the building department will accept and record payments for services requested.				
Trigger: Applicant has fulfilled requirements to obtain service Type: External				

Relationships:
    Association: Applicant and Cashier
    Include: Receive Application Submittal/Resubmittal, Perform Plan Review, Issue Certificate of Occupancy, Remediate Rejection
    Extend:
    Generalization:				

Normal Flow of Events: 1. Permit technician or plan reviewer sends fee listing to cashiering system electronically. 2. Cashier retrieves fee listing from their system and posts payment to accounting and building systems. 3. Cashiering system matches payment to fee listing in building system and marks fees paid.				
SubFlows:				
Alternate/Exceptional Flows:				

Class Diagram – As-Is Organization

Project

-Project ID
-Project Location
-Permit Type
-Permit Number
-Status
-Version
-Tenant Name
-Construction Type
-Occupancy Type
-Project Type
(Commercial/Residential)
-Total Project Area
-Total Livable Area
-Dwelling Units
-Scope of Work

+Request Service()
+Record Applicant Information()
+Submit/Withdraw Application()
+Review/Edit Payment Status()

Service

-Type
-Status
-Reviewer
-Approval/Denial Date
-Approval/Denial Status
-Denial Reason

+Assign Reviewer
+Update Service
+Record Result(s)
+Record Reason(s)

Applicant

-Company Name
-Individial Name
-Address
-City
-State
-ZipCode
-Phone
-Extension
-Fax
-Email
-Type

+Update Information

Fee

-Fee Type
-Amount Assessed
-Date/Time Assessed
-Payment Amount
-Payment Date/Time
-Payment Method

+Query Assessed Fee

Owner

Contractor

-Business
License Number

Class Diagram – To-Be Organization

Class Diagram – To-Be Information System

Project

-Project ID
-Project Location
-Permit Type
-Permit Number
-Status
-Version
-Tenant Name
-Construction Type
-Occupancy Type
-Project Type
(Commercial/Residential)
-Total Project Area
-Total Livable Area
-Dwelling Units
-Scope of Work

+Request Service()
+Record Applicant Information()
+Submit/Withdraw Application()
+Review/Edit Payment Status()

Service

-Type
-Status
-Reviewer
-Approval/Denial Date
-Approval/Denial Status
-Denial Reason

+Assign Reviewer
+Update Service
+Record Result(s)
+Record Reason(s)

1..*   0..*

Applicant

-Company Name
-Individial Name
-Address
-City
-State
-ZipCode
-Phone
-Extension
-Fax
-Email
-Type

+Update Information

1   *

1..*

0..*

Fee

-Fee Type
-Amount Assessed
-Date/Time Assessed
-Payment Amount
-Payment Date/Time
-Payment Method

+Query Assessed Fee

Owner

Contractor

-Business
License Number

Sequence Diagram(s) – To-Be Information System

ID #	Sequence Diagram Name	Page #
1	Receive Application Submittal/Resubmittal	40
2	Perform Plan Review	41
3	Perform Inspection(s)	42
4	Issue Certificate of Occupancy	43
5	Remediate Rejection	44
6	Create/Update Applicant Information	Not drafted
7	Create/Update Project Information	Not drafted
8	Verify Business License	Not drafted
9	Receive Payment	45

Sequence Diagram - Receive Application Submittal/Resubmittal

Dwayne Rennels, Dhiraj Sain, Lily Seigworth, David Vineyard, Chih-Hui "Kevin" Weng, Guolin "Ted" Zhang

Sequence Diagram - Perform Plan Review
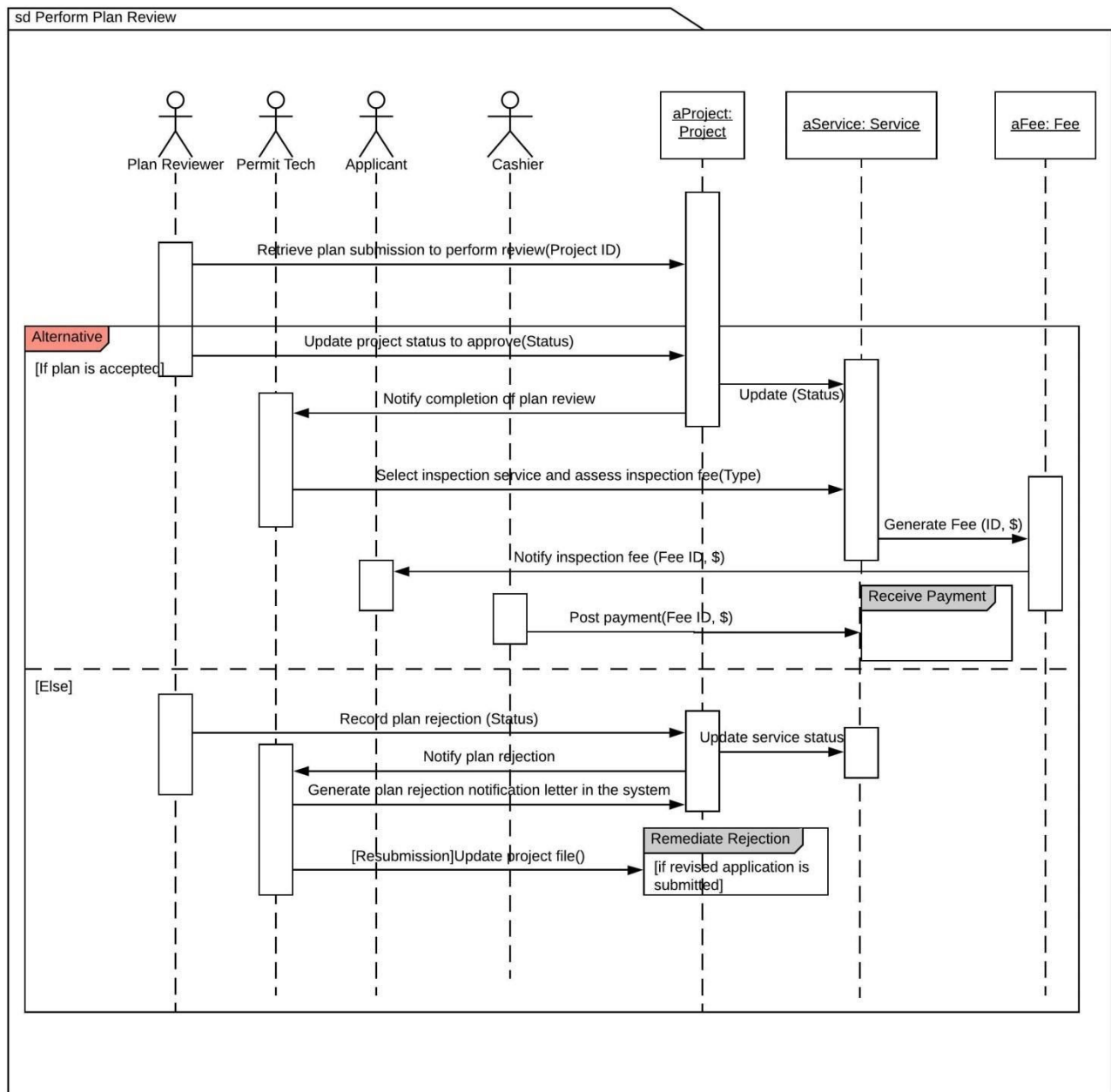
Sequence Diagram - Perform Inspection(s)
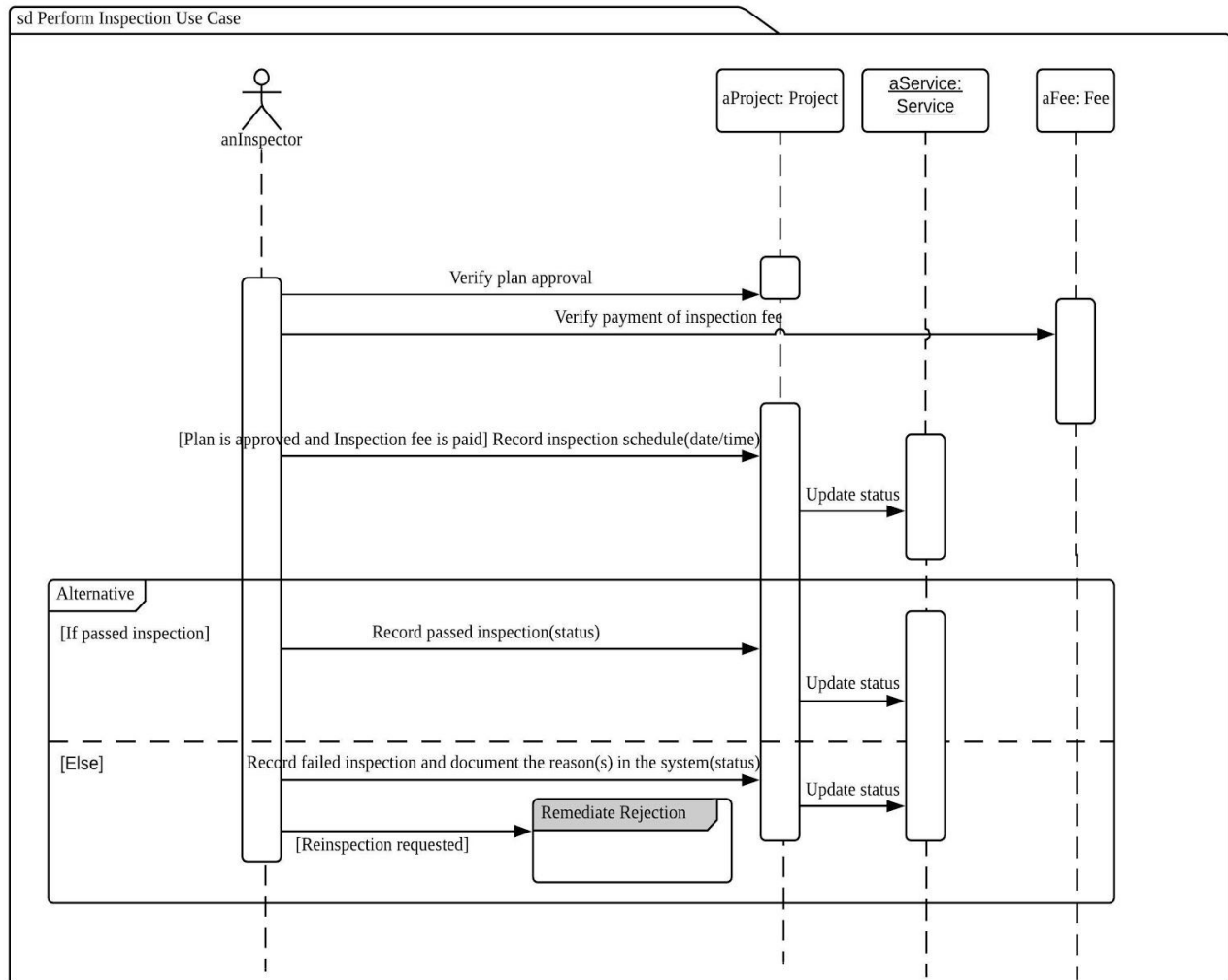
Sequence Diagram - Issue Certificate of Occupancy
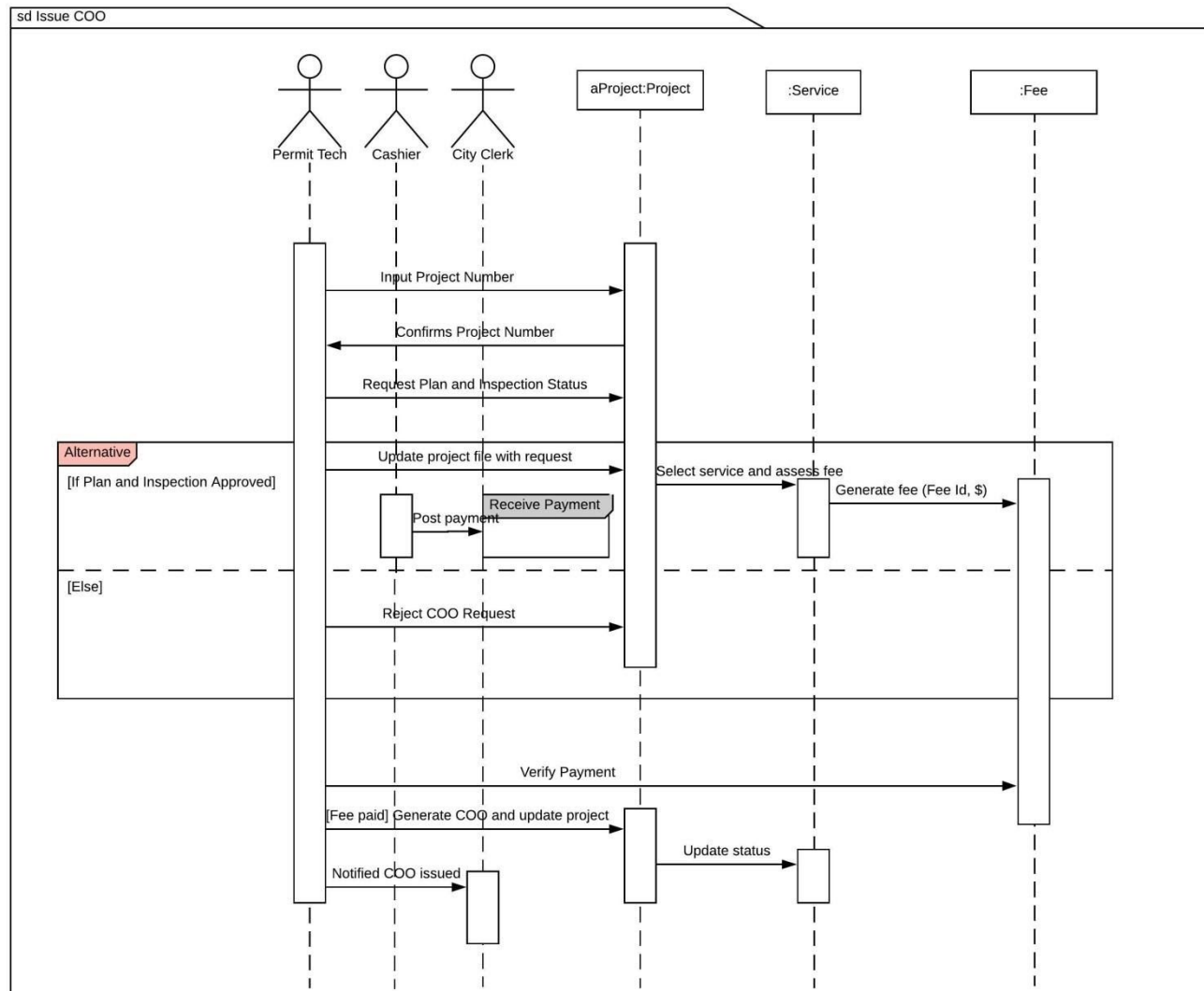
Sequence Diagram - Remediate Rejection
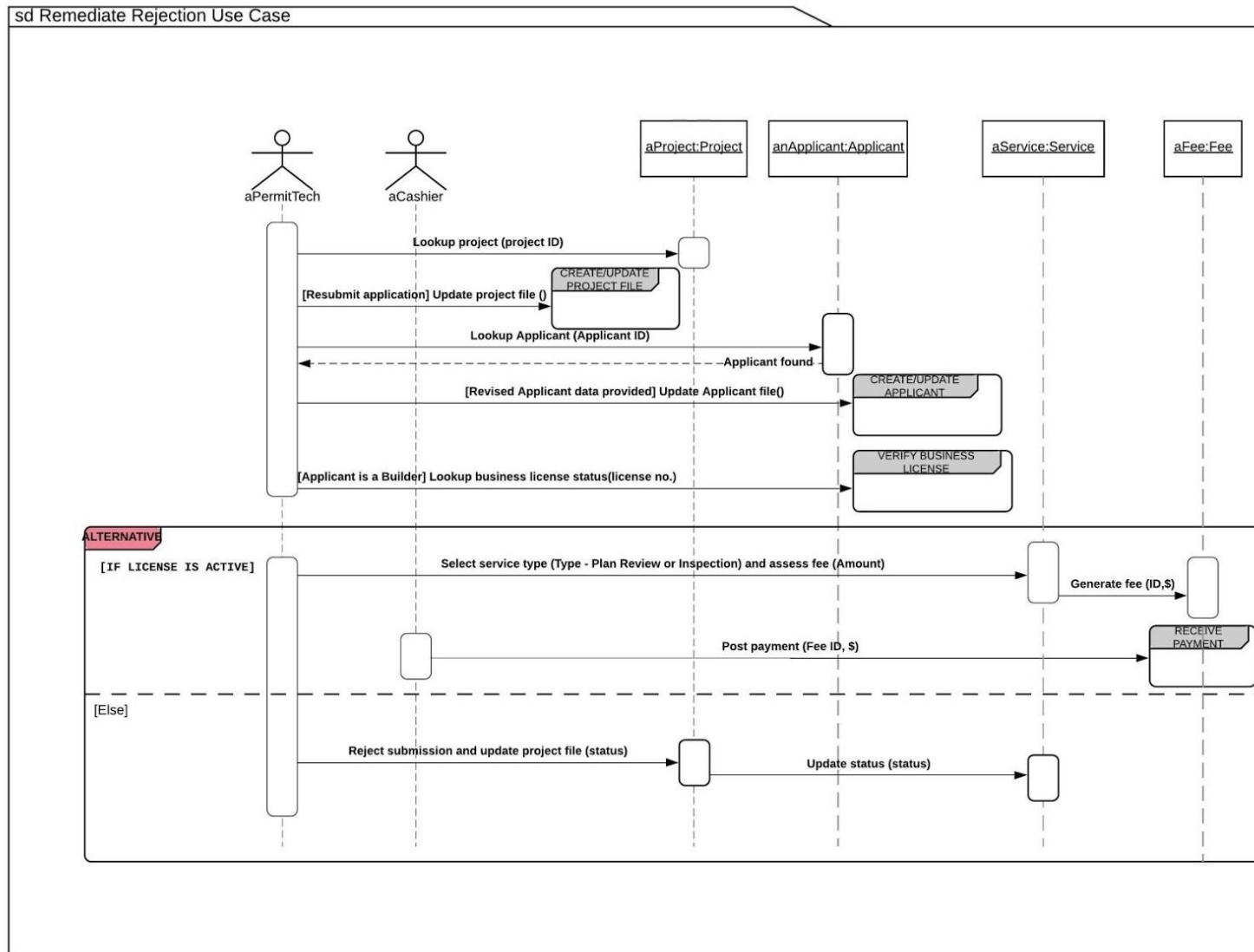
Sequence Diagram - Receive Payment
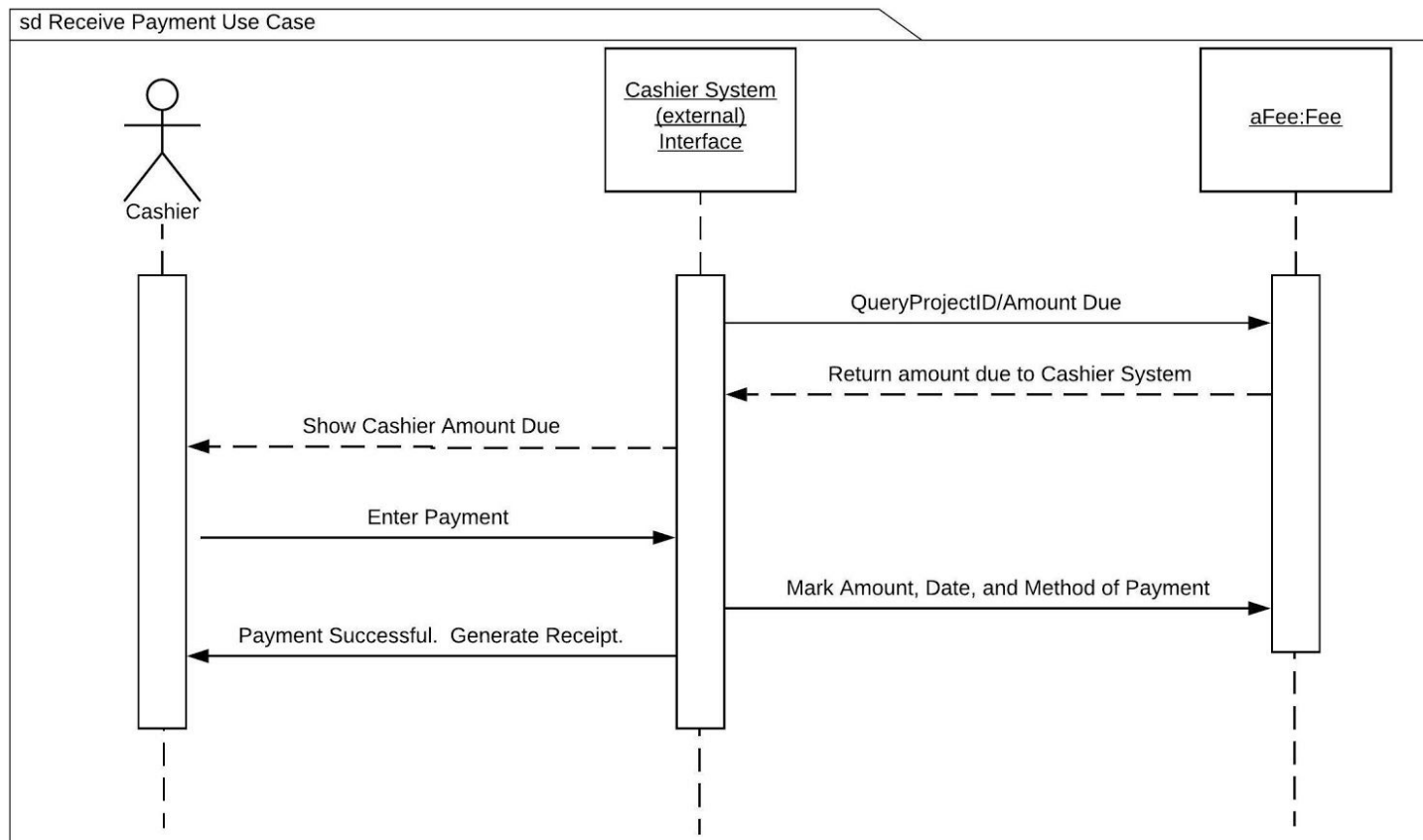
Behavioral State Machine Diagram(s) – To-Be Information System

ID #	Class Name	Page #
1	Project	47
2	Service	48
3	Applicant	49
4	Fee	50

Behavioral State Machine Diagram(s) – Project
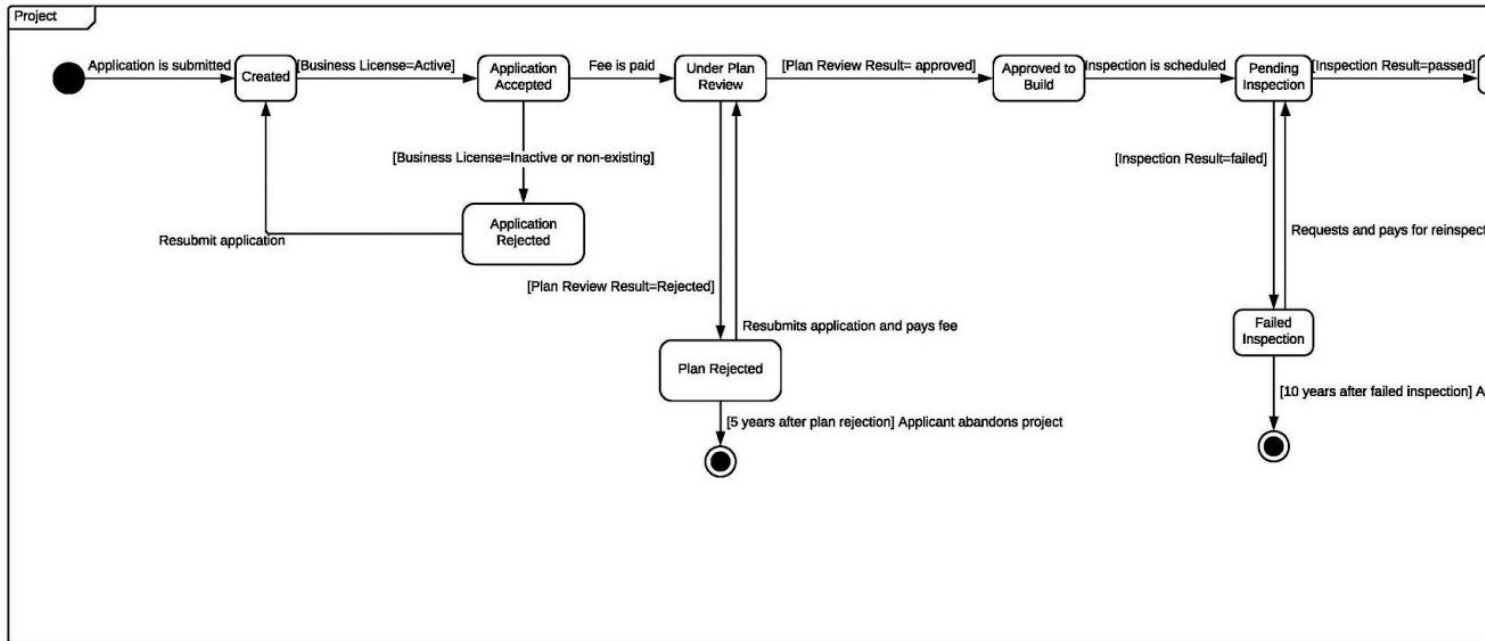
Behavioral State Machine Diagram(s) – Service
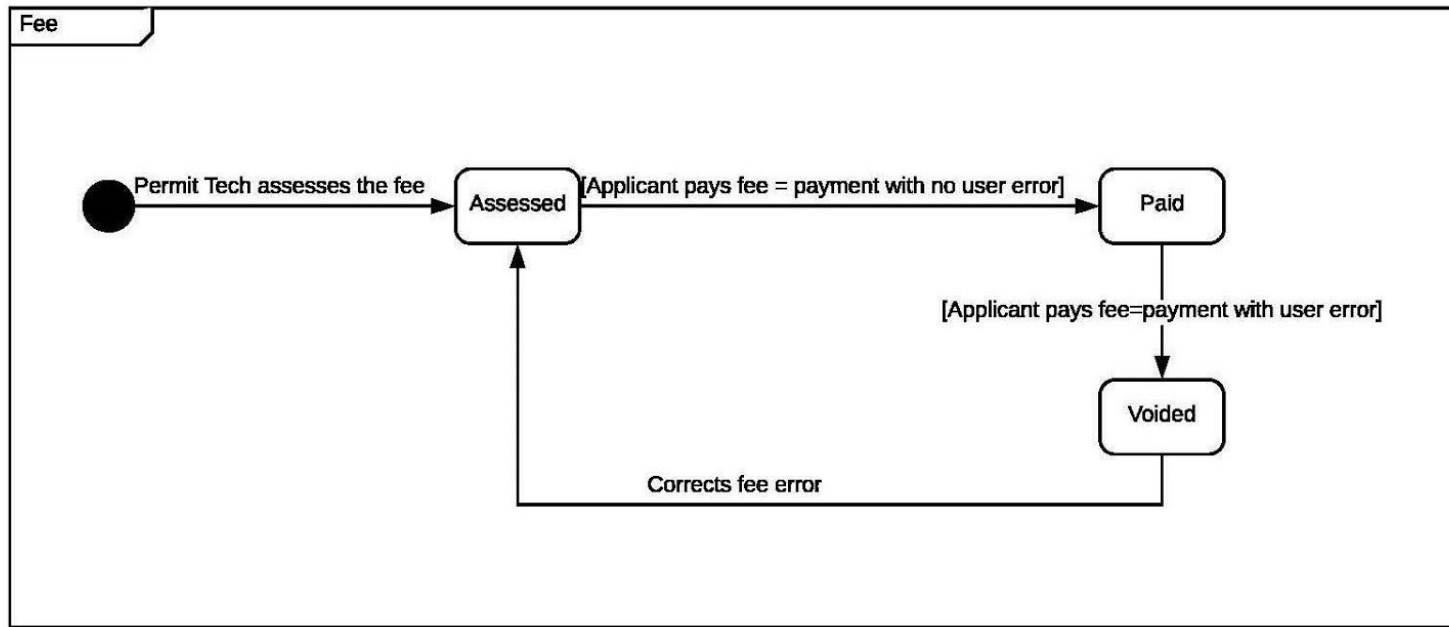
Behavioral State Machine Diagram(s) – Applicant

Behavioral State Machine Diagram(s) – Fee

User Interface Design

ID #	Screen Name	Page #
	UI Design Maps	52-54
	UI Design Mock-ups	Appendix 2
1	Main Menu	Appendix 2
2	Project	Appendix 2
3	Applicant Maintenance	Appendix 2
4	Service Maintenance	Appendix 2
5	Fee Maintenance	Appendix 2

UI Design Maps – Main Menu

2 - Project	(T)
Search	(F)
Results (Proj ID/Proj Address)	(L)
Edit	(B)
Create New	(B)
Back	(B)
Applicant	(B)
Service	(B)
Fee	(B)

1 - Main Menu	(T)
Project	(B)
Applicant Maintenance	(B)
Service Maintenance	(B)
Fee Maintenance	(B)

3 - Applicant Maintenance	(T)
Search	(F)
Results (Comp/Ind Name)	(L)
Edit Applicant	(B)
Create New	(B)
Back	(B)
Project	(B)
Service	(B)
Fee	(B)

4 - Service Maintenance	(T)
Search	(F)
Results (Type)	(L)
Edit	(B)
Create New	(B)
Back	(B)

Legend	
(T)	Title
(B)	Button
(L)	List
(LC)	Column in List

5 - Fee Maintenance	(T)
Search	(F)
Results (Type)	(L)
Edit	(B)
Create New	(B)
Back	(B)
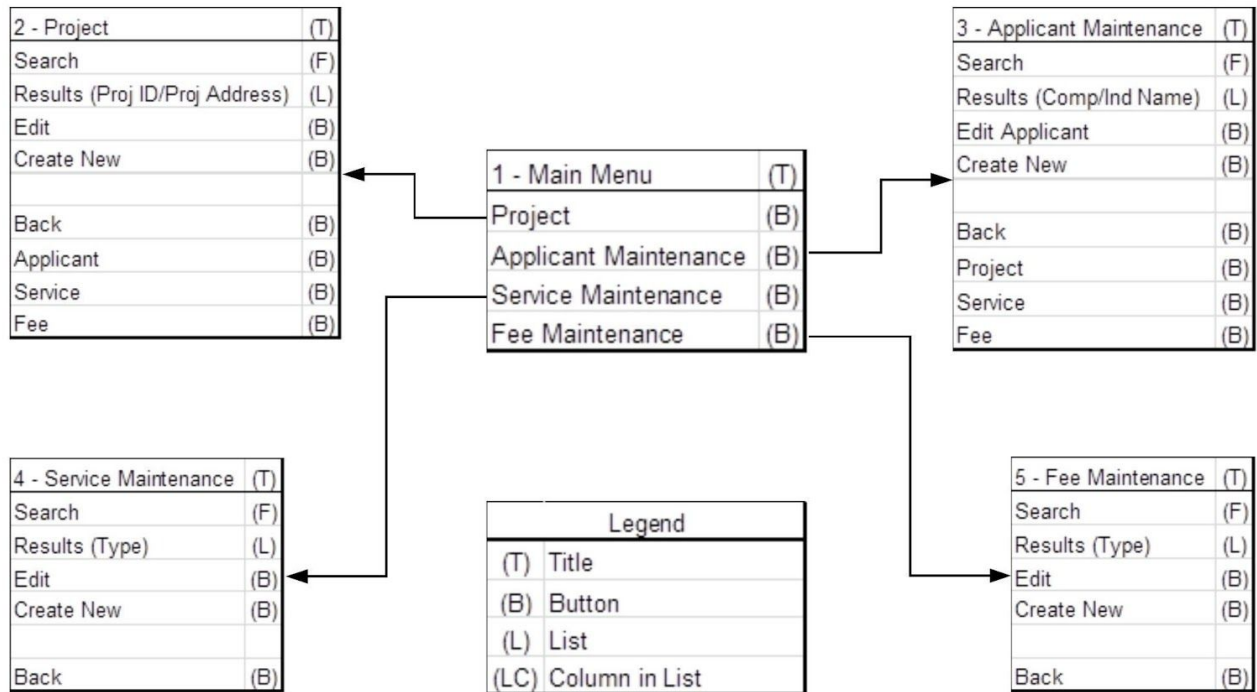
UI Design Maps – Project Menus

2a - Edit Project	(T)
Project ID	(F)
Project Location	(F)
Permit Type	(F)
Permit Number	(F)
Add Applicant	(B)
Status	(F)
Version	(F)
Tenant Name	(F)
Construction Type	(F)
Occupancy Type	(F)
Project Type	(F)
Total Project Area	(F)
Total Livable Area	(F)
Dwelling Units	(F)
Scope of Work	(F)
Edit/Update	(B)
Back	(B)
Service	(B)
Fee	(B)

2 - Project	(T)
Search	(F)
Results (Proj ID/Proj Address)	(L)
Edit	(B)
Create New	(B)
Back	(B)
Applicant	(B)
Service	(B)
Fee	(B)

2b - Create New Project	(T)
Project ID	(F)
Project Location	(F)
Permit Type	(F)
Permit Number	(F)
Add Applicant	(B)
Status	(F)
Version	(F)
Tenant Name	(F)
Construction Type	(F)
Occupancy Type	(F)
Project Type	(F)
Total Project Area	(F)
Total Livable Area	(F)
Dwelling Units	(F)
Scope of Work	(F)
Edit/Update	(B)
Back	(B)
Service	(B)
Fee	(B)

2c - Add Applicant	(T)
Search	(F)
Results (Comp/Ind Name)	(L)
Add to Project	(B)
Create New	(B)
Back	(B)

Legend		
(T)	Title	
(B)	Button	
(L)	List	
(LC)	Column in List	

UI Design Maps – Applicant/Service/Fee Menus

3a - Edit Applicant	(T)
Type	(F)
Company Name	(F)
Individual Name	(F)
Address	(F)
City	(F)
State	(F)
ZipCode	(F)
Phone	(F)
Extension	(F)
Fax	(F)
Email	(F)
Save	(B)
Back	(B)
Project	(B)
Service	(B)
Fee	(B)

3 - Applicant Maintenance	(T)
Search	(F)
Results (Comp/Ind Name)	(L)
Edit Applicant	(B)
Create New	(B)
Back	(B)
Project	(B)
Service	(B)
Fee	(B)

3b - Create New Applicant	(T)
Type	(F)
Company Name	(F)
Individual Name	(F)
Address	(F)
City	(F)
State	(F)
ZipCode	(F)
Phone	(F)
Extension	(F)
Fax	(F)
Email	(F)
Create	(B)
Back	(B)
Project	(B)
Service	(B)
Fee	(B)

Legend	
(T)	Title
(B)	Button
(L)	List
(LC)	Column in List

4a - Edit Service	(T)
Type	(F)
Save	(B)
Back	(B)

4 - Service Maintenance	(T)
Search	(F)
Results (Type)	(L)
Edit	(B)
Create New	(B)
Back	(B)

4b - Create New Service	(T)
Type	(F)
Save	(B)
Back	(B)

5a - Edit Fee	(T)
Type	(F)
Amount	(F)
Save	(B)
Back	(B)

5 - Fee Maintenance	(T)
Search	(F)
Results (Type)	(L)
Edit	(B)
Create New	(B)
Back	(B)

5b - Create New Fee	(T)
Type	(F)
Amount	(F)
Save	(B)
Back	(B)

Conversion Strategy

Due to the fact that in this instance, we are going from no computer system to a newly built computer system, there will be detailed acceptance testing before deployment, performed by key users to validate the system in a test environment. This testing will be used to ensure that the new system will be able to meet the demands of the permitting process from a small easy permit (water heater) to a large project (casino resort). We will also perform extensive testing of software interfaces with the cashier and city clerk (records) offices to ensure that interfaces work properly.

After satisfactory performance with acceptance testing, we will begin training all staff on how to use the new system and how it will impact business processes. There will be a roll-out date for which we will go live and implement the new system for all business processes at the same time, both in the main facility and in the secondary inspection facility. Once the system is turned on in one place, all aspects of the process concerning any permit started in the system will be processed through-out the system. All permits began prior to go-live date will be completed manually, unless the project is deemed a large and ongoing project (e.g., large development with significant continuing plan review/inspections to be performed).

Additionally, process documentation will be prepared and disseminated prior to go-live date in order to aid training and mitigate change resistance. Support will then be handled in-house by using the help desk to route any issues or concerns.

Finally, a panel will meet regularly (perhaps monthly) after implementation to review the progress and discuss enhancements that may be needed.

APPENDIX I

Input/Output Function Description and Function Points Count

Category	SubCategory	Required Form	No. of Function Points
Input/Output Functions Description and Function Point Count			
Commercial	Industrial Manufacturing	Building Permit Application	1
	Interior Remodel	Building Permit Application for Each Interior Remodel	1
	Office & Professional	Building Permit Application	1
	Retail Buildings	Building Permit Application	1
	Storage & Warehouse Building	Building Permit Application	1
	Tenant Improvements	Building Permit Application for Each Improvement	1
Total Commercial Input Function Points			**6**

Category	SubCategory	Required Form	No. of Function Points
Input/Output Functions Description and Function Point Count (continued)			
Residential	Apartments	Building Permit application [BAP1]	1
	Condominiums	Building Permit Application	1
	Custom Residential	Building Permit Application	1
	Residential Addition	Building Permit Application	1
	Single Family Standard Plan	Building Permit Application	1
	Single Family Production	Debris Containment Form	1
	Single Family Model	Building Permit Application and Debris Containment Form	2
	Townhouse	Building Permit Application	1
Total Residential Input Function Points			**9**

Category	SubCategory	Required Form	No. of Function Points
Input/Output Functions Description and Function Point Count (continued)			
Site Design	Civil Improvements	Civil Improvement Plan Submittal Form; Bond & Inspection Fee Form	2
	Subdivision, Multi-Family And	Grading Permit Application	1
	Hydrology Studies	Hydrology Study Application; Standard Form 1	2
	Standard Barricade *		0
	Traffic*		0
	Streetlight*		0
	Civil Improvement Permit	Project Cancellation Application	1
	Traffic Study	Traffic Impact Analysis Submittal Form	1
	Stockpile Permit	Stockpile Permit Application; Construction Permit	3
Total Site Design Function Points			**10**

Input/Output Functions Description and Function Point Count (continued)			
	Smoke Control Plan Review	Smoke Control Plan	1
	Smoke Control Panel Permit	Smoke Control Panel Permit Application	1
	Outdoor Pyrotechnic Displays	Outdoor Pyrotechnic Displays Permit Application	1
	Medical Gas Permit	Medical Gas Permit Application	1
	Residential Fire Sprinkler Plan	Fire Sprinkler Plan Review Checklist	1
Fire Safety	Commercial Fire Sprinkler	Fire Alarm Annunciator Permit Application	1
	Fire Alarm Systems	Fire Alarm Permit Application	1
	Civil Plans Initial Review	Preliminary Plan for a Civil Review	1
	One & Two Family Dwellings - Sprinkler System Underground	F240 Permit Worksheet	1
	Blasting Permit	Blasting Permit Application	1
Total Fire Safety Function Points			**10**

Input/Output Functions Description and Function Point Count (continued)			
	Retaining Walls and Fences	Building Permit Application	1
	Construction Trailer Plan Submittal	Building Permit Application	1
Other	Gate Permit	F080 and F085 Permit Applications	2
	Pool and Spa	Building Permit Application	1
	Sales Trailer Permit	Sales Trailer Permit Application	1
	Seasonal Lots Christmas	Application for Temporary Outside Sales	1
	Signs	Sign Permit Application	1
Total Other Function Points			**8**
Total Input Function Points			**43**	*
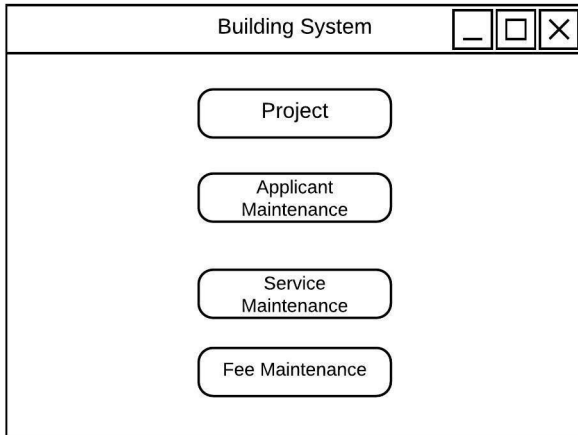
Contracted work. Procurement process is applicable.

APPENDIX 2
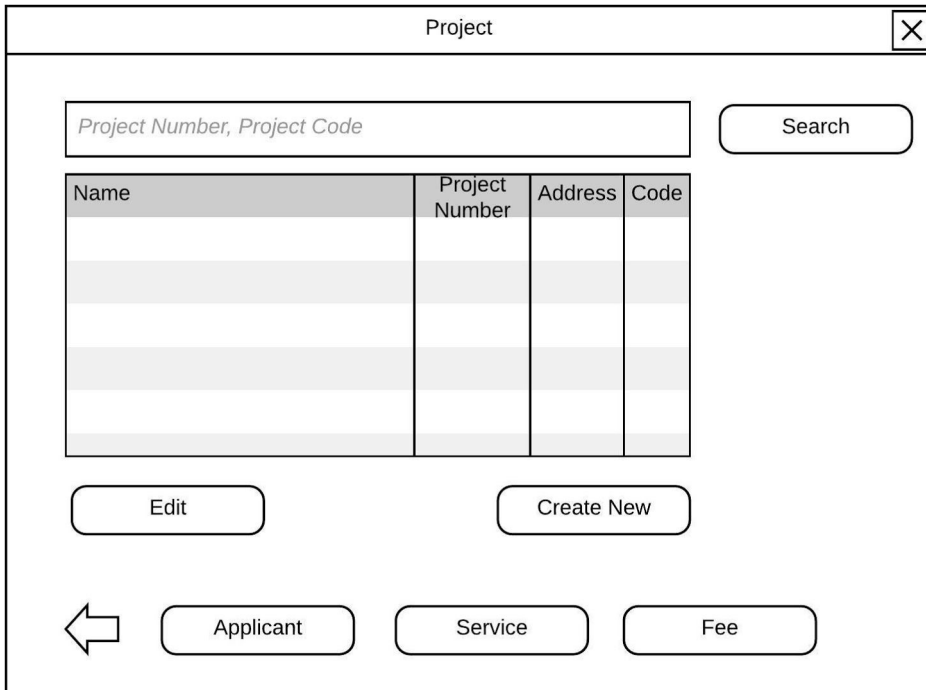
UI Design Mockups

1 - Main Menu

2 – Project Sub-Menu

2a – Edit Project Screen

Edit Project

Project ID		Occupancy Type	
Project Location		Project Type	
Permit Type		Total Project Area	
Permit Number		Total Livable Area	
Status		Dwelling Units	
Version		Construction Type	
Tenant Name		Tenant Name	
Scope of Work			

Edit/Update   Back   Service   Fee

2b – Create New Project Screen

Create New Project

Project ID		Occupancy Type	
Project Location		Project Type	
Permit Type		Total Project Area	
Permit Number		Total Livable Area	
Status		Dwelling Units	
Version		Construction Type	
Tenant Name		Tenant Name	
Scope of Work			

Edit/Update   Back   Service   Fee

2c – Add Applicant Screen

3 – Applicant Maintenance Sub-Menu

Applicant Maintenance ☒

Company Name/Individual Name   Search

Name	Type

Create New   Open   ?

⬅   Project   Service   Fee

3a – Edit Applicant Screen

Edit Applicant ☒

Type		Company name	
Individual Name		Address	
State		Zipcode	
Phone		Extension	
Fax		E-mail	

Project   Service   Fee

Back   Save

3b – Create New Applicant Screen

Create New Applicant

Type	[ ]	Company name	[ ]
Individual Name	[ ]	Address	[ ]
State	[ ]	Zipcode	[ ]
Phone	[ ]	Extension	[ ]
Fax	[ ]	E-mail	[ ]

(Project)   (Service)   (Fee)

(Back)   (Create)

4 – Service Maintenance Sub-Menu

Service Maintenance

Service Type   (Search)

Service Type
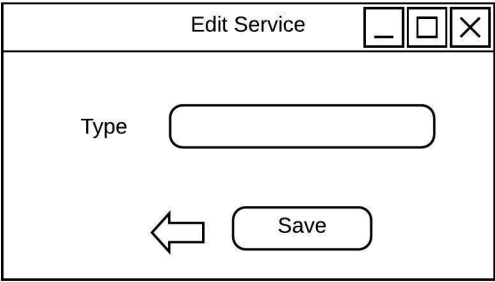
(Create New)   (Edit)
(Back)
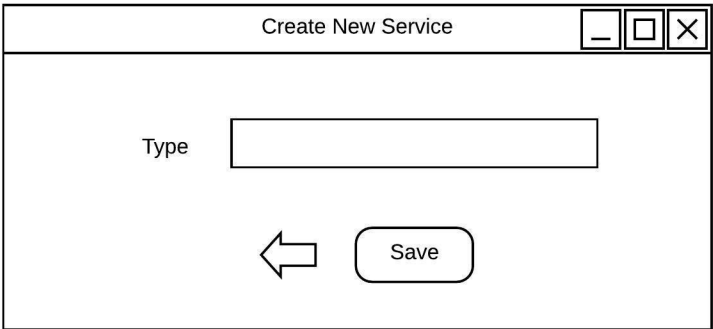
4a – Edit Service Screen

4b – Create New Service Screen

5 – Fee Maintenance Sub-Menu

5a – Edit Fee Screen

5b – Create New Fee Screen

Create New Fee   _ □ ✕

Type	

Amout	

Save

Back